Nicklaus Choo

Software Engineer · Google

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Work Experience

Google Software Engineer Full-time *SunnyVale, CA, USA* *Aug 29, 2022 - Present*

- Optimized AI/RAG performance on Kubernetes by designing a GPU/TPU/user-defined utilization based load balancing algorithm for Prefix-Cache Aware Routing; this maximized KV-cache hits to slash P90 TTFT latency by 96%, improve P90 NTPOT by 60%, and boost throughput by 32%
- 10x speedup for network design process with 15x reduction in memory resources for network topology graph data structures.
- Wrote graph traversal algorithms to efficiently traverse Google's network topology and detect single points of failure.
- Improved automation to re-map 25% of all edge network customers to greatly improve customer cost center allocation.

NetApp Software Engineer Intern *SunnyVale, CA, USA* *May 24, 2021 - Aug 20, 2021*

- 3x speedup for OS compile-update-reboot time for ONTAP virtual machines
- Automated ONTAP cloud cluster setup configuration for dynamic load testing
- 2.7x speedup for WAFL scheduler client I/O latency with minimal slowdown (0.8x) to WAFL scheduler replication operations latency
- Further optimized 3.5x speedup for client I/O and 1.2x speedup for replication operations with online random forest server load prediction

ZODAJ Full Stack Software Engineer Intern *Pittsburgh, PA, USA* *May 18, 2020 - Aug 7, 2020*

- Devised SMS and Android COVID-19 contact tracing for Senegal in partnership with Senegalese health authorities
- Designed NoSQL, PostgreSQL databases along with AWS Lambda RESTful API for TCN protocol contact tracing
- Directed and implemented all permissions and roles within ZODAJ for Amazon AWS databases
- Created exposure overlap algorithm for n people in a store that runs in max(O(k) or O($n \log n$)), where k is overlap count
- Wrote graph algorithms, discrete-time Markov chain SIR epidemic modeling for tracking infections

BOSCH ASEAN Linux Systems Engineer Intern (DevOps) *Singapore* *May 21, 2019 - Aug 19, 2019*

- Enabled Jenkins server to run 2 ISO builds in parallel (1 executor, 2 slaves) for testing via dynamic port allocation
- Identified bottleneck in debugging failed builds and significantly reduced debug time via auto log extraction from QEMU disks on build servers
- Modified Jenkins pipeline to reduce deployment testing from 20 mins to 1 min
- Began migration of current inventory servers to new OCS inventory servers via Ansible for seamless configuration
- Authored Linux Debian package for unit tests automation (security/functionality) on new OS installations

Eyeota Pte Ltd Data Analytics Intern *Singapore* *Dec 13, 2017 – May 10, 2018*

- Programmed data cleaning and classification of advertiser and buyer data from programmatic buy-side platforms
- Extracted advertisers' target demographic trends via both web-scraping and buyers' purchasing data
- Streamlined updates of daily, weekly, and monthly audience data sales revenue via complete process automation

Education

Carnegie Mellon University *Pittsburgh, PA, USA*

B.S. in Computer Science, Concentration in Algorithms & Complexity with University Honors *Aug 2018 - May 2022*

- Cumulative GPA **3.55**, School of Computer Science Dean's List, High Honors F19, F20, F21.
- Selected courses:

10-701 Machine Learning (PhD)
15-410 Operating Systems
15-411 Compiler Design (C++)
15-440 Distributed Systems (Java)
15-451 Algorithm Design & Analysis
15-459 Quantum Computation
15-356 Cryptography
15-210 Parallel Data Structures & Algos
15-213 Introduction to Computer Systems
15-251 Great Ideas in Theoretical CS
15-259 Probability & Computing
15-260 Statistics & Computing
21-241 Linear Algebra
21-259 Calculus 3D
21-301 Combinatorics
21-373 Abstract Algebra
80-413 Category Theory

Extracurriculars & Projects

Pebbles Kernel

- Created x86 kernel from scratch which supports essential syscalls such as fork/exec/wait, pre-emptive multitasking.
- Wrote device drivers for keyboard, timer, and hardware cursor.
- Code available at github.com/nicklauscyc/small-kernel

15-251 Great Ideas in Theoretical CS Course Tutor

- Conducted one-on-one tutoring sessions for students in the class

Technical Proficiencies

Languages

- C | C++ | Python | Java | Bash | SML | HTML | CSS | JavaScript